IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Siva Subramanian et al.
Serial No. 09/736,678
Filed: 12/13/2000
For: **DISTRIBUTED COMPUTATION IN NETWORK DEVICES**

Examiner: Avi M. Gold
Art Unit: 2157

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

An **APPEAL BRIEF** is filed herewith. Appellant also encloses a payment in the amount of $1520.00 to cover the fees associated with a Three-month Extension of Time and with this appeal brief as required by 37 C.F.R. § 1.17(c). If any additional fees are required in association with this appeal brief, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

APPEAL BRIEF

(1) REAL PARTY IN INTEREST

The real party in interest is the assignee of record, i.e., Nortel Networks Limited of 2351 Boulevard Alfred-Nobel, St. Laurent, Quebec Canada H4S 2A9, which is wholly owned by Nortel Networks Corporation, a Canadian corporation.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences to the best of Appellant's knowledge.

(3) STATUS OF CLAIMS

Claims 1-50 were rejected with the rejection made final on April 10, 2006.

Claims 1-50 are pending and are the subject of this appeal.

(4) STATUS OF AMENDMENTS

All amendments have been entered to the best of Appellant's knowledge. No amendments have been made after the final rejection mailed April 10, 2006.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The present invention facilitates routing traffic over a network and distributing application level support among multiple routing devices during routing. Routing nodes are configured to process the content of the traffic to provide the requisite application level support. The traffic is routed, in part, based on the resources available for providing the processing. The processing of the traffic may be distributed throughout the network based on processing capacity of the routing nodes at any given time and given the amount of network congestion (Specification, p. 3, lines 8-18).

When traffic is routed, processing resources required for delivery of the traffic from a source to the destination are determined. Since multiple routing paths may exist, one or more paths between the source and destination capable of providing the requisite application level support during routing are identified. Next, the available processing resources in the possible paths are compared with the resources required for routing. One or more paths are then selected to optimize routing and minimize congestion. Upon selection of the one or more paths, the traffic may be routed and processed accordingly (Specification, p. 3, lines 19-30).

The requisite application level processing may be distributed among multiple routing nodes and paths to make sure that sufficient resources are available and delivery does not negatively affect other traffic. The distribution of the processing is preferably based on available resources and perhaps on other network conditions bearing on the processing and routing performance for the particular traffic flow, the network in general, or a combination thereof (Specification, p. 3, line 31 through p. 4, line 5).

Claim 1 recites a method for distributing processing among routing nodes (see routing nodes 10, Figures 1A-1D and Figure 3) capable of providing application level support during routing, the method comprising:

configuring the routing nodes to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) (Specification, p. 6, lines 21-25; see also Figures 1A-1D and 3-8);

identifying processing resources required to provide application level support during routing for select traffic (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic in the compute plane of the at least one routing node (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8); and

routing the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support (Specification, p. 10, line 12 through p. 12, line 3; see also Figure 2, step 112 and Figure 7, step 220),

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

Claim 13 recites a method for distributing processing among multiple routing devices (such as routing nodes 10, Figures 1A-1D and Figure 3) capable of providing application level support, the method comprising:

determining processing resources necessary for the application level support of traffic to be routed (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

monitoring processing capacity available on a plurality of routing nodes (such as routing nodes 10, Figures 1A-1D and Figure 3) capable of providing the application level support and routing the traffic, wherein each of the plurality of routing nodes is configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) (Specification, p. 6, lines 21-25; p. 8, lines 12-22; p. 10, line 12 through p. 12, line 3; see also Figures 1A-1D and 2-8);

identifying at least two of the plurality of routing nodes having combined processing capacity in the respective compute planes to provide the application level support necessary for the traffic to be routed (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 7); and

routing the traffic in a manner allowing the at least two routing nodes to provide the processing for the application level support (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

Claim 16 recites a routing element (such as communication server 8, Figure 1, or routing nodes 10, Figures 1A-1D) facilitating distribution of application level processing during routing comprising a control system adapted to:

determine processing resources necessary for application level support of traffic to be routed (Specification, p. 3, line 13 through p. 4, line 5, p. 10, line 12 through p. 12, line 3; see also Figure 2);

monitor processing capacity available on a plurality of routing nodes (such as routing nodes 10, Figures 1A-1D and Figure 3) capable of providing the application level support and routing the traffic, wherein each of the plurality of routing nodes is configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) (Specification, p. 6, lines 21-25; p. 8, lines 12-22; p. 10, line 12 through p. 12, line 3; see also Figures 1A-1D and 2-8);

identify at least two of the plurality of routing nodes having combined processing capacity in the respective compute planes to provide the application level support necessary for the traffic to be routed (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 7); and

facilitate routing the traffic in a manner allowing the at least two routing nodes to provide the processing for the application level support (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

Claim 19 recites a system for distributing processing among routing nodes (see routing nodes 10, Figures 1A-1D and Figure 3) capable of providing application level support during routing, the system comprising:

means for identifying processing resources required to provide the application level support during routing for select traffic (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

means for selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic, wherein the at least one routing node is configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) and the application level support is provided in the compute plane

(Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8); and

means for routing the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support (Specification, p. 10, line 12 through p. 12, line 3; see also Figure 2, step 112, and Figure 7, step 220),

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figure 2 and 5-8).

The means for identifying the processing resources required can be the communication server 8 (see Figure 1), or by a protocol implemented between the routing nodes 10 (see Figures 1A-1D), either by themselves, or in conjunction with the application server 4 or a personal computer 6 (see Figure 1) (Specification, p. 8, lines 12-22). The means for selecting at least one routing node capable of providing the processing resources required to provide the application level support is also the communication server 8 (see Figure 1), or it can be the routing nodes 10 (see Figures 1A-1D) using a protocol. The routing nodes can do the selecting themselves, or in conjunction with the application server 4 or a personal computer 6 (see Figure 1) (Specification, p. 8, lines 12-22). The means for routing the select traffic are the routing nodes 10 (see Figures 1A-1D).

Claim 31 recites a computer readable medium containing software for distributing processing among routing nodes (see routing nodes 10, Figures 1A-1D and Figure 3) capable of providing application level support during routing, the software comprising computer instructions to:

identify processing resources required to provide the application level support during routing for select traffic (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

select at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic wherein the at least one routing node is configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D)

(Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8); and

facilitate routing of the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support (Specification, p. 10, line 12 through p. 12, line 3; see Figure 2, step 112),

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic in the compute plane (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

Claim 43 recites a computer readable medium containing software for distributing processing among multiple routing devices (such as routing nodes 10, Figures 1A-1D and Figure 3) capable of providing application level support, the software comprising computer instructions to:

determine processing resources necessary for application level support of traffic to be routed (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

monitor processing capacity available on a plurality of routing nodes (such as routing nodes 10, Figures 1A-1D and Figure 3) capable of providing the application level support and routing the traffic (Specification, p. 6, lines 21-25; p. 8, lines 12-22; p. 10, line 12 through p. 12, line 3; see also Figures 1A-1D and 2-8);

identify at least two of the plurality of routing nodes having combined processing capacity to provide the application level support necessary for the traffic to be routed wherein the at least two of the plurality of routing nodes are configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 7); and

route the traffic in a manner allowing the at least two of the plurality of routing nodes to provide the processing for the application level support in the respective compute planes (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

Claim 46 recites a routing element (such as communication server 8, Figure 1, or routing nodes 10, Figures 1A-1D) facilitating distribution of application level processing during routing comprising a control system adapted to:

identify processing resources required to provide the application level support during routing for select traffic (Specification, p. 3, line 13 through p. 4, line 5; p. 10, line 12 through p. 12, line 3; see also Figure 2);

select at least one routing node (such as routing nodes 10, Figures 1A-1D) capable of providing the processing resources required to provide the application level support for the select traffic wherein the at least one routing node is configured to include a control plane (control plane 12, Figures 1A-1D), a compute plane (compute plane 14, Figures 1A-1D) and a forward plane (forward plane 16, Figures 1A-1D) (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8); and

route the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support in the compute plane (Specification, p. 10, line 12 through p. 12, line 3; see also Figure 2, step 112, and Figure 7, step 220),

wherein the routing element provides the application level support for the select traffic while routing the select traffic (Specification, p. 10, line 12 through p. 12, line 3; p. 13, lines 3-30; p. 16, lines 12-21; p. 18, line 8 through p. 19, line 4; see also Figures 2 and 5-8).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1-47 and 50 were properly rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,611,874 to Denecheau et al. (hereinafter "Denecheau") in view of Applicant's Admitted Prior Art (hereinafter "APA") and further in view of U.S. Patent No. 6,421,734 to Nessett et al. (hereinafter "Nessett").

B. Whether claims 48 and 49 were properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Denecheau, in view of AAPA, and Nessett and further in view of U.S. Patent No. 6,701,363 to Chiu et al. (hereinafter "Chiu").

(7) ARGUMENT

A. Introduction

The Patent Office has not shown where all the elements of the claim are shown with sufficient particularity to sustain an obviousness rejection. The claimed invention includes routing nodes that include a control plane, a compute plane, and a forward plane. The inventive method includes identifying processing resources required to provide application level support during routing for select traffic, selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic in the compute plane of the at least one routing node, and routing the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support, wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic. The combination of cited references fails to teach or suggest routing nodes that include the claimed compute plane such that application level support for the select traffic is provided in the compute plane of the at least one routing node, as required by the claimed invention. Since the cited references, individually or in combination, fail to teach each and every limitation of the claimed invention, the claimed invention is patentable.

In addition, the Patent Office has not shown that the proposed combination is proper. In particular, the Patent Office has not provided any actual evidence to support the motivation to combine the references, and the Patent Office is ignoring portions of the references which teach away from the combination. In fact, the proposed combination would render the invention disclosed in the Denecheau reference unsuitable for its intended purpose, which makes the proposed combination improper.

For the above reasons, Appellant respectfully submits that claims 1-50 of the present application are allowable, and therefore requests that the Board reverse the Examiner and instruct the Examiner to allow the claims for these reasons.

B. Summary of the References

1. U.S. Patent No. 6,611,874 to Denecheau

Denecheau is directed to a method for statistically improving routing within an internet, and particularly for improving next hop selection between internetwork routers (Denecheau, col.

1, lines 8-11). A source is identified by a source IP address and a source port identification, and a destination or target is defined by a target port identification (Denecheau, Abstract). Equivalent routes toward the destination host are identified conventionally and each of the equivalent routes is defined by next router IP address. *Ibid.* The source IP address, source port identification, and target port identification are logically combined to derive a connection identifier (HO) for a first router common to all paths. *Ibid.* A set of additional logical operations are performed to derive next hop selection identifiers. Final next hop route selection is based on predefined criterion. *Ibid.*

2. APA

Appellant, in the background section of the Specification, discussed that routers existing at the time of the filing of the present application offered little or no application support during routing (Specification, p.1, lines 20-22). Appellant also discussed that the existing routers were typically divided into a control plane and a forward plane (Specification, p. 1, lines 22-23). The control plane is generally used to establish routing tables used by the forward plane. The forward plane receives packets, processes the packets based on the routing tables, and delivers the packets to the next-hop address or the final destination, depending on the termination point for each packet (Specification, p. 1, lines 24-31). Appellant also mentioned that the forward planes in the prior art routers were typically limited to packet delivery based on basic header analysis and manipulation, and historically, application level support, such as that requiring analysis or manipulation of the packet's payload, has been avoided (Specification, p. 1, line 32 through p. 2, line 2). Devices at the time capable of providing application processing, such as firewalls, were uniquely configured for the special application where the routing speeds for normal routing in the forward plane are significantly impacted or the control plane is uniquely adapted to handle such processing. In either case, the basic routing capability of the forward plane is inhibited (Specification, p. 2, lines 2-10). Thus, traditional routers at the time of the present application do not typically provide application level processing (Specification, p. 2, lines 10-11).

3. U.S. Patent No. 6,421,734 to Nessett

Nessett relates to protocols used for managing compression resources distributed in a network, and particularly to techniques for avoiding the use of compression resources on data that has already been compressed, or is otherwise less suitable for compression by intermediate links in a network (Nessett, col. 1, lines 12-17). These active networking techniques enable intermediate systems to determine whether data in a packet which is traversing the system is compressed, encrypted, or otherwise dynamically processed (Nessett, Abstract). Based on this determination, the dynamic processing resources at the intermediate system are invoked or not, so as to conserve dynamic processing resources. *Ibid.* Active networking data is placed in packets flowing between end systems. *Ibid.* The end systems may not know whether there are intermediate systems between it and the other end system that require knowledge about compressed data in the packet. *Ibid.* The active networking data is placed in the packets so that any intermediate systems that can use knowledge of which packets contain compressed data may use the active networking data to make the determination. *Ibid.*

4. U.S. Patent No. 6,701,363 to Chiu

Chiu is directed to measuring and analyzing performance characteristics for accessing hyper-link documents, such as web pages, over a communication network, and particularly to those characteristics that are viewed at a client system that give insight to application efficiency and to web page document design and organization (Chiu, col. 1, lines 19-25).

C. Legal Standards for Establishing Obviousness

Section 103(a) of the Patent Act provides the statutory basis for an obviousness rejection and reads as follows:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Courts have interpreted 35 U.S.C. § 103(a) as a question of law based on underlying facts. As the Federal Circuit stated:

> Obviousness is ultimately a determination of law based on underlying determinations of fact. These underlying factual determinations include: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) the extent of any proffered objective indicia of nonobviousness.

Monarch Knitting Mach. Corp. v. Sulzer Morat GmBH, 45 U.S.P.Q.2d (BNA) 1977, 1981 (Fed. Cir. 1998) (internal citations omitted).

Once the scope of the prior art is ascertained, the content of the prior art must be properly combined. For the Patent Office to prove that there is a suggestion to combine the references, the Patent Office must do two things. First, the Patent Office must state a motivation to combine the references, and second, the Patent Office must support the stated motivation with actual evidence. *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). Even if the Patent Office is able to articulate and support a suggestion to combine the references, it is impermissible to pick and choose elements from the prior art while using the application as a template. *In re Fine*, 837 F.3d 1071 (Fed. Cir. 1988). To reconstruct the invention by such selective extraction constitutes impermissible hindsight. *In re Gorman*, 933 F.2d 982 (Fed. Cir. 1991). After the combination has been made, for a *prima facie* case of obviousness, the combination must still teach or fairly suggest all of the claim elements. *In re Royka*, 490 F.2d 981 (C.C.P.A. 1974); MPEP § 2143.03.

While the Patent Office is entitled to give claim terms their broadest reasonable interpretation, this interpretation is limited by a number of factors. First, the interpretation must be consistent with the specification. *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000); MPEP § 2111. Second, the broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, (Fed. Cir. 1999); MPEP § 2111. Finally, the interpretation must be reasonable. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004); MPEP § 2111.01. This means that the words of the claim must be given their plain meaning unless Appellant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989).

If a claim element is missing after the combination is made, then the combination does not render obvious the claimed invention, and the claims are allowable. As stated by the Federal Circuit, "[if] the PTO fails to meet this burden, then the Appellant is entitled to the patent." *In re Glaug*, 283 F.3d 1335, 1338 (Fed. Cir. 2002).

D. Claims 1-47 and 50 Are Non-Obvious

1. The Combination of Denecheau, the APA, and Nessett Is Improper Because the Patent Office Has Not Supported the Stated Motivation to Combine Denecheau, the APA, and Nessett with Actual Evidence

For the Patent Office to combine references in an obviousness rejection, the Patent Office must prove there is a suggestion to combine the references. For the Patent Office to prove that there is a suggestion to combine the references, the Patent Office must do two things. First, the Patent Office must state a motivation to combine the references, and second, the Patent Office must support the stated motivation with actual evidence. *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). If the Patent Office cannot establish obviousness, the claims are allowable. MPEP § 2143.03.

Appellant respectfully submits that the Patent Office has failed to properly support the stated motivation to combine the references. Specifically, the Patent Office asserts that the motivation to combine Denecheau with the APA is "because it makes use of sophisticated application-level knowledge." (Final Office Action mailed April 10, 2006, p. 4). This asserted motivation lacks the evidence required by the Federal Circuit. That is, the Patent Office has not proven that there is any desire to use sophisticated application-level knowledge in a system like Denecheau's system, nor has the Patent Office proven that the combination would actually allow use of the sophisticated application-level knowledge. To this extent, the motivation advanced by the Patent Office is not sufficient to combine the references.

The Patent Office responds to Appellant's argument with the standard cite to *In re Fine* and *In re Jones* for the proposition that obviousness can only be established by combining the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art (Final Office Action mailed April 10, 2006, p. 13, paragraph 6). The Patent Office ignores the holding of the Federal Circuit in *Dembiczak*, which specifically acknowledged *Fine*, but emphasized the requirement for actual evidence in proving the motivation to combine the references, stating that "[t]he range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular. Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). In the Final Office Action, the Patent Office states the combination of Denecheau and AAPA, and the

combination of Denecheau, AAPA, Nessett, and Chiu use knowledge generally available to one of ordinary skill in the art (Final Office Action mailed April 10, 2006, p. 13, paragraph 6). This is exactly the kind of conclusory statement, with no actual evidence to support it, which is not the necessary evidence required by the Federal Circuit to support a stated motivation to combine. In addition, the courts have held that a statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d (BNA) 1300 (Bd. Pat. App. & Inter. 1993); see also *In re Kotzab,* 217 F.3d 1365, 1371, (Fed. Cir. 2000); MPEP §2143.01(IV). To this extent, the motivation advanced by the Patent Office lacks the required evidence to support it and therefore is not sufficient. Since the motivation to combine is improper, the proposed combination is improper. Since the combination is improper, the rejection is improper, and the claims are allowable.

2. The Combination of Denecheau, the APA, and Nessett Is Improper Because the Combination Would Render Denecheau Unsuitable for Its Intended Purpose

Appellant further traverses the combination of references because the combination renders Denecheau unsuitable for its intended purpose. Appellant notes that Denecheau still does not teach **any** application level processing in the node. While the Patent Office has stated that Denecheau teaches the elements of the claim at col. 3, lines 43-58 and col. 6, line 66 through col. 7, line 20 (see Final Office Action mailed April 10, 2006, p. 3), these passages discuss next hop routing based on destination, not based on the provision of application level processing. The inclusion of application level processing actually renders Denecheau unsuitable for its intended purpose because routing to provide such application level processing may contradict the next hop identified by Denecheau's method. Making a reference unsuitable for its intended purpose is evidence of non-obviousness. MPEP § 2143.01.

In the Advisory Action, the Patent Office responds by stating that the rejection involves certain portions of Denecheau and not the reference as a whole, thus allowing for a combination of the references (Advisory Action mailed August 3, 2006, p. 2). This argument is faulty for at least two reasons. First, the Patent Office's statement is contrary to the established Federal Circuit case law. A prior art reference must be considered in its entirety, i.e. as a whole,

including portions which would lead away from the claimed invention. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); see also MPEP § 2141.02. Second, it ignores the fact that adding application level processing to Denecheau would render Denecheau unsuitable for its intended purpose because routing to provide such application level processing may contradict the next hop identified by Denecheau's method. As noted above, making a reference unsuitable for its intended purpose is evidence of non-obviousness. MPEP § 2143.01. This is true regardless of whether the Patent Office is relying only on isolated portions of Denecheau. Thus, the combination that the Patent Office is proposing is not obvious, and the claims are allowable.

3. The Combination of Denecheau, the APA, and Nessett Does Not Render Claims 1-47 and 50 Obvious Because the Combination Does Not Teach the Claimed Compute Plane

Claims 1-47 and 50 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Denecheau in view of the APA and further in view of Nessett. To establish *prima facie* obviousness, the Patent Office must show where each and every element of the claim is taught or suggested in the combination of references. Even if the combination is proper, a point which Appellant does not concede, the Patent Office has not established obviousness. Specifically, as admitted by the Patent Office, Denecheau and the APA do not teach the compute plane in the routing node (Final Office Action mailed April 10, 2006, p. 4). The Patent Office relies on Nessett for this missing element. However, as noted by the Patent Office, Nessett uses an intermediate device to apply compression and/or encryption (Nessett, col. 2, lines 14-38). There is no teaching that the decompression and compression resources 112, 113 of Nessett are within a compute plane as recited in the claims (see Nessett, Figure 1 and col. 4, lines 20-27). The Patent Office asserts that it would be obvious to include a compute plane with functions such as compression and decompression as part of a routing node (see Final Office Action mailed April 10, 2006, p. 4) per the claims, but there is no explanation for why the decompression and compression resources 112, 113 of Nessett would be moved to a compute plane per the claims. Rather, the Patent Office merely says that the decompression functions are known and it would be obvious to put them on a compute plane. Establishing *prima facie* obviousness requires more than such broad conclusory statements. There must be some teaching that the application level functions are provided on a compute plane. To date, the combination does not teach or suggest

this arrangement, and the Patent Office has not established *prima facie* obviousness. Since the Patent Office has not established obviousness, the claims are allowable.

The Patent Office's only rebuttal in the Final Office Action is that Nessett discloses an intermediate device which applies compression and/or encryption, which are the same functions as the claimed compute plane as shown in Appellant's specification (Final Office Action mailed April 10, 2006, pp. 13-14, paragraph 7). First of all, just because the intermediate device of Nessett may perform similar functions as the claimed compute plane does not make it a compute plane. Second, even assuming that Nessett discloses an intermediate device which performs similar functions as the claimed compute plane, a point which Appellant does not concede, Nessett, alone or in combination with Denecheau and the AAPA, still does not teach configuring the routing nodes to include a control plane, a compute plane, and a forward plane, and selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic in the compute plane of the least one routing node, as required by the claims. Third, the functions mentioned by the Examiner are not even part of the claims. Even if they were part of the claims, a prior art device that performs all the functions recited in the claim still does not render the claims unpatentable if there is any structural difference. MPEP §2114. Here, there is a structural difference. The intermediate device of Nessett is not structurally equivalent to the claimed compute plane that is part of a routing node. Just because the intermediate device may perform some of the same functions as the claimed compute plane does not make it the claimed compute plane.

In the Advisory Action, the Patent Office states that a recitation of an intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art and that if the prior art structure is capable of performing the intended use, then it meets the claim (Advisory Action mailed August 3, 2006, p. 2). Notably, the Patent Office provides no case law or evidentiary support for its argument. In fact, the Patent Office's statement is contrary to the established rule of law. Contrary to the assertion by the Patent Office that if the prior art structure is capable of performing the intended use, then it meets the claim, the MPEP makes clear that a prior art device can perform all the functions of the claim and still not meet the claim. See MPEP §2114 ("Even if the prior art device performs all the functions recited in the claim, the prior art cannot anticipate the claim if there is any structural difference."). As noted above, there is a structural

difference in this case between the intermediate device of Nessett and the claimed compute plane, which is part of a routing node. The claimed invention recites configuring the routing nodes to include a control plane, **a compute plane**, and a forward plane, wherein at least one routing node is selected that is capable of providing the processing resources required to provide the application level support for the select traffic in the **compute plane** of the at least one routing node. The intermediate device of Nessett is not a compute plane that is part of the routing node, wherein the application level support is provided in the compute plane. Just because the intermediate device may perform compression and encryption functions does not make it the claimed compute plane, especially given that those functions are not recited in the claim. Quite simply, Nessett does not teach the claimed compute plane, wherein the application level support is provided in the compute plane.

In the present case, in order to teach each and every element of the claim, there must be some teaching or suggestion that the application level functions are provided on a compute plane. To date, the Patent Office has provided no explanation or teaching for why the decompression and compression functions of Nessett would be moved to a compute plane per the claims. Thus, the combination does not teach or suggest the elements as arranged in the claims, and the Patent Office has therefore not established *prima facie* obviousness. Since the Patent Office has not established obviousness, the claims are allowable.

E. Claims 48 and 49 Are Non-Obvious

1. Claims 48 and 49 are Non-Obvious Because the Combination of Denecheau, the APA, Nessett, and Chiu Does Not Teach the Claimed Compute Plane

Claims 48 and 49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Denecheau, the APA, and Nessett and further in view of Chiu et al. (hereinafter "Chiu"). The standards for establishing obviousness are set forth above. As argued above with respect to claims 1-47 and 50, the combination of Denecheau, the APA, and Nessett is improper and does not teach or suggest all the elements of the independent claims. In particular, the combination of Denecheau, the APA, and Nessett does not teach or suggest the compute plane as claimed. The addition of Chiu does not cure this deficiency. Thus, claims 48 and 49 are allowable for the same reasons as claims 1-47 and 50.

2. Claims 48 and 49 are Non-Obvious Because the Combination of Denecheau, the APA, Nessett, and Chiu Is Improper

Appellant also respectfully submits that the rejection of claims 48 and 49 is improper because the Patent Office has not properly supported the motivation to combine the references. Specifically, the Patent Office asserts the motivation to combine the references is "because it would allow for more ways to route the traffic which would provide more efficient routing overall." (Final Office Action mailed April 10, 2006, p. 12). However, the Patent Office has offered no actual evidence to support the stated motivation. Therefore, the asserted motivation lacks the required evidence. Since the motivation lacks the required evidence, the motivation is improper. Since the motivation is improper, the combination is improper. Since the combination is improper, the rejection is improper, and the claims are allowable for this reason as well.

F. Conclusion

The Patent Office has not shown where all the elements of the claims are shown with sufficient particularity to sustain an obviousness rejection. The combination of cited references fails to teach or suggest routing nodes that include the claimed compute plane such that application level support for the select traffic is provided in the compute plane of the at least one routing node, as required by the claimed invention. Since the cited references, individually or in combination, fail to teach each and every limitation of the claimed invention, the claimed invention is patentable.

In addition, the Patent Office has not show that the proposed combination is proper. In particular, the Patent Office has not provided any actual evidence to prove the motivation to combine the references, and the Patent Office is ignoring portions of the references which teach away from the combination. In fact, the proposed combination would render the invention disclosed in the Denecheau reference unsuitable for its intended purpose, which makes the proposed combination improper.

For the above reasons, Appellant respectfully submits that claims 1-50 of the present application are allowable, and therefore requests that the Board reverse the Examiner and instruct the Examiner to allow the claims for these reasons.

Respectfully submitted,

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(8) APPENDIX

1. A method for distributing processing among routing nodes capable of providing application level support during routing, the method comprising:

configuring the routing nodes to include a control plane, a compute plane and a forward plane;

identifying processing resources required to provide application level support during routing for select traffic;

selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic in the compute plane of the at least one routing node; and

routing the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support,

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic.

2. The method of claim 1 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the selecting step further comprises determining the at least one routing node from the plurality of routing nodes to provide the application level support in a manner to balance processing load among the plurality of routing nodes.

3. The method of claim 1 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the selecting step further comprises determining the at least one routing node from the plurality of routing nodes based on available processing capacity of the at least one routing node to provide the application level support.

4. The method of claim 1 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the selecting step further comprises determining the at least one routing node from the plurality of

routing nodes based on available processing capacity of the plurality of routing nodes and the at least one routing node to provide the application level support.

5. The method of claim 1 wherein the selecting step selects a plurality of routing nodes through which to route the select traffic to distribute the application level support for the select traffic and the routing step routes the select traffic to facilitate distribution of the application level support such that processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

6. The method of claim 5 wherein the selecting step further comprises selecting the plurality of routing nodes within one routing path such that all of the select traffic is routed through each of the plurality of routing nodes and processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

7. The method of claim 5 wherein the selecting step further comprises selecting the plurality of routing nodes within different routing paths such that a different portion of the select traffic is routed through each of the plurality of routing nodes and processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

8. The method of claim 7 wherein the selecting step further comprises selecting the plurality of routing nodes wherein at least two of the plurality of routing nodes are within one of the different routing paths such that processing for the application level support for the portion of the select traffic routed through the at least two of the plurality of routing nodes is distributed between the at least two of the plurality of routing nodes.

9. The method of claim 1 wherein the selecting step further comprises:

identifying possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including the at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identifying a capacity of the at least one routing node in the possible routing paths to provide the processing resources; and

determining at least one of the possible routing paths through which to route the select traffic based on the capacity of the at least one routing node in the possible routing paths to provide the processing resources.

10. The method of claim 9 further comprising allocating resources of the at least one routing node along the at least one of the possible routing paths to provide the processing for the application level support while routing.

11. The method of claim 1 wherein the selecting step further comprises:

identifying possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identifying capacities of a plurality of routing nodes among the possible routing paths to provide the processing resources; and

determining at least one of the possible routing paths through which to route the select traffic based on the capacity of the plurality of routing nodes in the possible routing paths to provide the processing resources.

12. The method of claim 11 wherein the selecting step further comprises distributing processing among the plurality of routing nodes to provide the application level support for the select traffic.

13. A method for distributing processing among multiple routing devices capable of providing application level support, the method comprising:

determining processing resources necessary for the application level support of traffic to be routed;

monitoring processing capacity available on a plurality of routing nodes capable of providing the application level support and routing the traffic, wherein each of the plurality of routing nodes is configured to include a control plane, a compute plane and a forward plane;

identifying at least two of the plurality of routing nodes having combined processing capacity in the respective compute planes to provide the application level support necessary for the traffic to be routed; and

routing the traffic in a manner allowing the at least two routing nodes to provide the processing for the application level support.

14. The method of claim 13 further comprising determining how to distribute the processing for the application level support among the at least two routing nodes based on the processing resources necessary for the application level support.

15. The method of claim 14 further comprising reserving sufficient resources of the at least two routing nodes prior to routing to the at least two routing nodes to provide the processing capacity for the application level support necessary for the traffic.

16. A routing element facilitating distribution of application level processing during routing comprising a control system adapted to:

determine processing resources necessary for application level support of traffic to be routed;

monitor processing capacity available on a plurality of routing nodes capable of providing the application level support and routing the traffic, wherein each of the plurality of routing nodes is configured to include a control plane, a compute plane and a forward plane;

identify at least two of the plurality of routing nodes having combined processing capacity in the respective compute planes to provide the application level support necessary for the traffic to be routed; and

facilitate routing the traffic in a manner allowing the at least two routing nodes to provide the processing for the application level support.

17. The routing element of claim 16 wherein said control system is further adapted to determine how to distribute the processing for the application level support among the at least two routing nodes based on the processing resources necessary for the application level support.

18. The routing element of claim 17 wherein said control system is further adapted to reserve sufficient resources of the at least two routing nodes prior to routing to the at least two routing nodes to provide the processing capacity for the application level support necessary for the traffic.

19. A system for distributing processing among routing nodes capable of providing application level support during routing, the system comprising:

means for identifying processing resources required to provide the application level support during routing for select traffic;

means for selecting at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic, wherein the at least one routing node is configured to include a control plane, a compute plane and a forward plane and the application level support is provided in the compute plane; and

means for routing the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support,

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic.

20. The system of claim 19 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the means for selecting is capable of determining the at least one routing node from the plurality of routing nodes to provide the application level support in a manner to balance processing load among the plurality of routing nodes.

21. The system of claim 19 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the means for selecting is capable of determining the at least one routing node from the plurality of routing nodes based on available processing capacity of the at least one routing node to provide the application level support.

22. The system of claim 19 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the means for selecting is capable of determining the at least one routing node from the plurality of routing nodes based on available processing capacity of the plurality of routing nodes and the at least one routing node to provide the application level support.

23. The system of claim 19 wherein the means for selecting is capable of selecting a plurality of routing nodes through which to route the select traffic to distribute the application level support for the select traffic and the means for routing is capable of routing the select traffic to facilitate distribution of the application level support such that processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

24. The system of claim 23 wherein the means for selecting is capable of selecting the plurality of routing nodes within one routing path such that all of the select traffic is routed through each of the plurality of routing nodes and processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

25. The system of claim 23 wherein the means for selecting is capable of selecting the plurality of routing nodes within different routing paths such that a different portion of the select traffic is routed through each of the plurality of routing nodes and processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

26. The system of claim 25 wherein the means for selecting is capable of selecting the plurality of routing nodes wherein at least two of the plurality of routing nodes are within one of the different routing paths such that processing for the application level support for the portion of the select traffic routed through the at least two of the plurality of routing nodes is distributed between the at least two of the plurality of routing nodes.

27. The system of claim 19 wherein the means for selecting is capable of:

identifying possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including the at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identifying a capacity of the at least one routing node in the possible routing paths to provide the processing resources; and

determining at least one of the possible routing paths through which to route the select traffic based on the capacity of the at least one routing node in the possible routing paths to provide the processing resources.

28. The system of claim 27 further comprising means for allocating resources of the at least one routing node along the at least one of the possible routing paths to provide the processing for the application level support while routing.

29. The system of claim 19 wherein the means for selecting is capable of:

identifying possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including the at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identifying capacities of a plurality of routing nodes among the possible routing paths to provide the processing resources; and

determining at least one of the possible routing paths through which to route the select traffic based on the capacity of the plurality of routing nodes in the possible routing paths to provide the processing resources.

30. The system of claim 29 wherein the means for selecting is capable of distributing processing among the plurality of routing nodes to provide the application level support for the select traffic.

31. A computer readable medium containing software for distributing processing among routing nodes capable of providing application level support during routing, the software comprising computer instructions to:

identify processing resources required to provide the application level support during routing for select traffic;

select at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic wherein the at least one routing node is configured to include a control plane, a compute plane and a forward plane; and

facilitate routing of the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support ,

wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic in the compute plane.

32. The computer readable medium of claim 31 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the instructions to select the at least one routing node are configured to determine the at least one routing node from the plurality of routing nodes to provide the application level support in a manner to balance processing load among the plurality of routing nodes.

33. The computer readable medium of claim 31 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the instructions to select the at least one routing node are configured to determine the at least one routing node from the plurality of routing nodes based on available processing capacity of the at least one routing node to provide the application level support.

34. The computer readable medium of claim 31 wherein the at least one routing node is at least one of a plurality of routing nodes that can provide the application level support for the select traffic and the instructions to select the at least one routing node are configured to determine the at least one routing node from the plurality of routing nodes based on available processing capacity of the plurality of routing nodes and the at least one routing node to provide the application level support.

35. The computer readable medium of claim 31 wherein the instructions to select at least one routing node are configured to select a plurality of routing nodes through which to route the select traffic to distribute the application level support for the select traffic and the instructions to route are configured to route the select traffic to facilitate distribution of the application level support such that processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

36. The computer readable medium of claim 35 wherein the instructions to select the at least one routing node are configured to select the plurality of routing nodes within one routing path such that all of the select traffic is routed through each of the plurality of routing nodes and the processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

37. The computer readable medium of claim 35 wherein the instructions to select the at least one routing node are configured to select the plurality of routing nodes within different routing paths such that a different portion of the select traffic is routed through each of the plurality of routing nodes and the processing for the application level support is distributed among the plurality of routing nodes while routing the select traffic.

38. The computer readable medium of claim 37 wherein the instructions to select the at least one routing node are configured to select the plurality of routing nodes wherein at least two of the plurality of routing nodes are within one of the different routing paths such that the processing for the application level support for the portion of the select traffic routed through the at least two of the plurality of routing nodes is distributed between the at least two of the plurality of routing nodes.

39. The computer readable medium of claim 31 wherein the instructions to select the at least one routing node are configured to:

identify possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including the at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identify a capacity of the at least one routing node in the possible routing paths to provide the processing resources; and

determine at least one of the possible routing paths through which to route the select traffic based on the capacity of the at least one routing node in the possible routing paths to provide the processing resources.

40. The computer readable medium of claim 39 wherein the software further comprises instructions to allocate resources of the at least one routing node along the at least one of the possible routing paths to provide the processing for the application level support while routing.

41. The computer readable medium of claim 31 wherein the instructions to select the at least one routing node are configured to:

identify possible routing paths between a source and a destination for the select traffic, each of the possible routing paths including the at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic;

identify capacities of a plurality of routing nodes among the possible routing paths to provide the processing resources; and

determine at least one of the possible routing paths through which to route the select traffic based on the capacity of the plurality of routing nodes in the possible routing paths to provide the processing resources.

42. The computer readable medium of claim 41 wherein the instructions to select the at least one routing node are configured to distribute processing among the plurality of the routing nodes to provide the application level support for the select traffic.

43. A computer readable medium containing software for distributing processing among multiple routing devices capable of providing application level support, the software comprising computer instructions to:

determine processing resources necessary for application level support of traffic to be routed;

monitor processing capacity available on a plurality of routing nodes capable of providing the application level support and routing the traffic;

identify at least two of the plurality of routing nodes having combined processing capacity to provide the application level support necessary for the traffic to be routed wherein the at least two of the plurality of routing nodes are configured to include a control plane, a compute plane and a forward plane; and

route the traffic in a manner allowing the at least two of the plurality of routing nodes to provide the processing for the application level support in the respective compute planes.

44. The computer readable medium of claim 43 wherein the software further comprises instructions to determine how to distribute the processing for the application level support among the at least two of the plurality of routing nodes based on the processing resources necessary for the application level support.

45. The computer readable medium of claim 44 wherein the software further comprises instructions to reserve sufficient resources of the at least two of the plurality of routing nodes prior to routing to the at least two of the plurality of routing nodes to provide the processing capacity for the application level support necessary for the traffic.

46. A routing element facilitating distribution of application level processing during routing comprising a control system adapted to:

identify processing resources required to provide the application level support during routing for select traffic;

select at least one routing node capable of providing the processing resources required to provide the application level support for the select traffic wherein the at least one routing node is configured to include a control plane, a compute plane and a forward plane; and

route the select traffic through the at least one routing node capable of providing the processing resources required to provide the application level support in the compute plane,

wherein the routing element provides the application level support for the select traffic while routing the select traffic.

47. The method of claim 1 wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic by manipulating a payload of a packet within the select traffic.

48. The method of claim 1 wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic by providing secure socket layer (SSL) applications.

49. The method of claim 1 wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic by providing Internet Protocol security applications.

50. The method of claim 1 wherein the at least one routing node provides the application level support for the select traffic while routing the select traffic by operating on layer four and higher protocols within packets within the select traffic.

(9) EVIDENCE APPENDIX

Appellant relies on no evidence, thus this appendix is not applicable.

(10) RELATED PROCEEDINGS APPENDIX

As there are no related proceedings, this appendix is not applicable.